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AIRCRAFT FUEL CONSUMPTION O THE G.A.F.

MARCH, 1945

1. The first section of this report provides the regular monthly estimate of the consumption of "standard" types of aircraft fuel (C.3. B.4. A.3) by the German Air Force; Part II estimates the J.2. fuel consumed by jet propelled aircraft.

PART I. STANDARD TYPES OF FUEL (C.3. B.4. A.3).

2. The March consumption figures are summarised in the Table below:-

G.A.F. Aircraft Fuel Consumption, March 1945

I.	First-Line Aircraft		
	A. Operational Flights	10,300 tons	
	B. Transfer and training flights	1,600 tons	
	C. Rest and refitting flights	200 tons	
	Total, first-line aircraft		12,100 tons
II.	Aircraft Industry		
	A. New production: test and ferrying flights	500 tons	
	B. Repair; test and ferrying flights	300 tons	
	Total, Aircraft Industry		800 tons
III.	Training Units		
	A. Single-engined fighter training	3,400 tons	
	B. Twin-engined fighter training	1,100 tons	
	C. Ground-attack, Bomber and misc. training	500 tons	
	Total, Training Units		5,000 tons
IV.	Transport Units		3,100 tons
V.	Communications and Auxiliary Units		700 tons
VI.	Experimental Units		200 tons
VII.	Second-Line Units		1,100 tons
VIII.	Miscellaneous		500 tons
	Total, German Air Force		23,500 tons

3. Confronted with the dilemma of mounting defensive commitments through the rapid Allied advance, on the one hand, and ever-dwindling supplies of aircraft fuel on the other, the G.A.F. has elected to adopt the short-term policy of allotting the bulk of its monthly supplies to operational units at the expense of all kinds of non-operational flying. March therefore witnessed the anomalous position of an Air Force out-of-balance, in which increases in the scale of tactical sorties on both fronts were countered by sharp reductions in

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the training programme for operational crews and in the number of transport and other non-operational flights. The extent to which the emphasis has shifted to operational flying may be indicated by the fact that fuel consumption by first-line aircraft in January was roughly 35% of total G.A.F. fuel consumption, while by March this proportion had risen to slightly more than 50%.

The net position for the Air Force as a whole was one of a further decline in fuel consumption to a new low of 23,500 tons.

4. Present information does not permit any estimate of the amounts of aircraft fuel stocks deliberately destroyed or abandoned during the hasty retreat of the G.A.F. from operational airfields about to be overrun, or of any loss of fuel in aircraft shot up and destroyed on the ground.

5. First-Line Aircraft

The greater threat to the Reich following upon the Rhine crossings, combined with improved weather conditions, resulted in a substantial increase in the scale of tactical sorties by single engined fighters in the West. An increase over the February level was also observed in G.A.F. activity on the Eastern Front in the ground-attack, S.E. fighter and tactical reconnaissance categories. L.R. bomber sorties were negligible in the West but rose in the East, partly on supply dropping missions.

6. Aircraft Industry

The aircraft industry consumed less aircraft fuel in testing and ferrying flights than in any previous month, accounted for by the loss of aircraft production and repair facilities.

7. Training

The A. and B. training schools in the West suffered in March the same fate which befell the schools located East of Berlin during the previous month. To the large scale transfers of training schools necessitated by the Allied progress and the consequent losses of flying time, aircraft and fuel, were added the first stages of the dissolution of the whole training programme, which has proceeded apace during April. The S.E.F. R.T.U. organisation is believed to have remained intact during the month and to have continued flying training at only slightly below the February level. T.E.F. R.T.U. activity and

/consumption,

consumption, on the other hand, is thought to have declined very sharply, owing to the reduced demand for new operational crews for the T.E.F. units.

8. Fuel consumption by the transport organisation, on balance, was two-thirds of the February figure. The bulk of transport activity continued to be on the North Russian front. In the West air supply of the Atlantic Fortresses fell further during the month. A decline was also observed in the scale of supply operations in the Vienna area.

PART II J.2. FUEL

9. The type of fuel normally used in the Jumo 004 jet engine is J.2. Other types of fuel including B.4. have apparently been used in emergency. J.2. is described as a low-grade diesel oil with a specific gravity of .83, but present intelligence on its composition is not complete.

10. Only fragmentary information is currently available on some aspects of the jet programme and any estimate of fuel consumption made at this time is necessarily very crude. The types of jet aircraft using the Jumo 004 engine are the twin-engined He.262 and Ar.234, and the single-engined "Volks-jäger" He.162. The rate of fuel consumption with this engine is considerably higher than with standard types of engines. On the basis of intelligence from captured jet pilots and aircraft, it has been established that the "average" He.262 flight consumes approximately 1.25 tons of J.2. The Ar.234, used partly for long-range reconnaissance, has a greater fuel capacity and is believed to consume 1.67 tons per flight. A consumption rate of 0.75 tons has been taken for the He.162, which has not yet appeared operationally.

11. The figures of fuel consumption by the jet aircraft force during March are set out in the table below. No retrospective estimates are possible. Since the jet programme has been gradually but continually expanding, the March consumption figure is believed to be the highest yet attained.

G.A.F. J.2. Fuel Consumption, March 1945

I.	Operational Units	2, 200 tons
II.	Non-Operational Units	1, 200 tons
III.	Training Units	600 tons
IV.	Aircraft Industry	1, 000 tons
	Total	5, 000 tons

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12. There is continuing evidence of a shortage of J.2. fuel, and the G.A.F. authorities are reported to have forbidden its use for taxying. Many of the restrictions on flying imposed by the aircraft fuel shortage apparently also apply to jet aircraft. Examination of J.2. has not revealed any properties which would make its production particularly difficult, although pilots have reported that there are difficulties in starting if the fuel is not according to specification. It is therefore believed probable that the J.2. shortage is a function of the overall fuel shortage.

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AIRCRAFT FUEL CONSUMPTION OF THE G. A. F.

FEBRUARY, 1945

1. This paper presents the second monthly estimate of aircraft fuel consumed by the German Air Force. The figures for the month of February are summarised in the table below.

G.A.F. Aircraft Fuel Consumption, February 1945

I.	First-Line Aircraft		
	A. Operational flights	9,600 tons	
	B. Transfer and training flights	1,700 tons	
	C. Rest and refitting flights	200 tons	
	Total, First-Line Aircraft		11,500 tons
II.	Aircraft Industry		
	A. New production: test and ferrying flights	1,200 tons	
	B. Repair: test and ferrying flights	500 tons	
	Total, Aircraft Industry		1,700 tons
III.	Training Units		
	A. Single-engined fighter training	5,200 tons	
	B. Twin-engined fighter training	2,100 tons	
	C. Bomber, Transport and misc. training	700 tons	
	Total, Training Units		8,000 tons
IV.	Transport Units		4,700 tons
V.	Communications and Auxiliary Units		1,000 tons
VI.	Experimental Units		300 tons
VII.	Second-Line Units		1,100 tons
VIII.	Miscellaneous		700 tons
	Total, German Air Force		29,000 tons ✠

2. The methods by which the various figures were derived have been indicated in the Schedules appended to the January report. It is again stressed that these estimates should only be considered as provisional and approximate.

3. The downward trend of G.A.F. fuel consumption continued during February when a record low of 29,000 tons was reached. Apart from the continued over-all shortage of aircraft fuel, the dislocation of activity resulting from the Russian advance was the chief cause of the further decline, which was felt primarily in non-operational flying by the transport and training organisations.

✠ Jet and rocket-propelled fighters are excluded from this estimate, since the types of low grade fuel consumed are not comparable to the standard types of aircraft fuel.

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4. Fighter-Bomber Aircraft

Single-engined fighter activity in the West, continually restricted by shortages of fuel, was confined largely to offensive tactical sorties: the scale of effort remained at the low level of the previous month. Although evidence of G.A.F. operations on the Eastern Front is relatively scanty, it is believed that a high level of activity was sustained during February, resulting in a net increase in fuel consumption by operational flying. The increased scale of effort was particularly noticeable in the single-engined fighter and ground-attack categories, although this increase was partially counter-balanced by the shorter duration of these largely tactical sorties in the East. Twin-engined fighter effort remained at the January level in the West but increased substantially on the Eastern Front. Long-range bomber and reconnaissance flights rose slightly on all fronts.

5. Aircraft Industry

Minor variations from the previous month in the output of new and repaired aircraft of all types were cancelled out; total fuel consumption in testing and ferrying flights remained approximately at the January figure.

6. Training

The advance of the Russian armies in the East produced a serious disorganisation in the training programme of the A. and B. Schools. The flying hours lost through the transfer of a considerable number of the schools in the area, together with the dislocation of fuel supplies, loss of aircraft, etc. consequent on these transfers, reduced fuel consumption in the A. and B. Schools to roughly 75% of the January level.

The entire S.E.P. R.T.F. organisation was obliged to transfer from its training airfields East of Berlin during the last week of January and the first fortnight of February. Fuel consumption is believed on balance, to have fallen to 70% of the January figure. T.E.F. and other training was not so seriously affected, although some decline in training activity was observed.

7. Transport and Communications

The transport organisation consumed some 500 tons less fuel during February, accounted for by reductions, necessitated in part by the lack of fuel, in the number of supply-dropping sorties to the Atlantic Fortresses and of Ju.52 flights in Central Europe and the East. Communications and auxiliary flights suffered a decline in activity amounting to 10% of the January figure.

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17th March, 1945

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AIRCRAFT FUEL CONSUMPTION OF THE G.A.F.

JANUARY 1945.

1. This report estimates the consumption of aircraft fuel by the German Air Force during the month of January and attempts to establish a systematic procedure for providing such estimates in the future.

2. The rounded figures for consumption by the various branches of the air force are listed in the table below.

G.A.F. Aircraft Fuel Consumption, January 1945.

I.	First-Line Aircraft.		
	A. Operational flights	8,900 tons	
	B. Transfer and training flights	1,800 tons	
	C. Rest and refitting flights	500 tons	
	Total, First-Line Aircraft		11,200 tons.
II.	Aircraft Industry.		
	A. New production: test and ferrying flights	1,300 tons	
	B. Repair: test and ferrying flights	400 tons	
	Total, Aircraft Industry		1,700 tons.
III.	Training Units.		
	A. Single-engined fighter training	6,900 tons	
	B. Twin-engined fighter training	2,500 tons	
	C. Bomber, Transport and misc. training	800 tons	
	Total, Training Units		10,200 tons.
IV.	Transport Units		5,200 tons.
V.	Communications and Auxiliary Units		1,100 tons.
VI.	Experimental Units		300 tons.
VII.	Second-Line Units		1,400 tons.
VIII.	Miscellaneous		900 tons.
	Total, German Air Force		32,000 tons=

3. In general terms, these calculations are based upon estimates of:

(a) the number of sorties flown during the month in the various branches of the G.A.F; and

(b) the average rate of fuel consumption per sortie.

A fuller discussion of the method of calculation used in each case, together with the detailed breakdown of the total consumption figure shown for each branch of the G.A.F., is given in the appended Schedules. In view of

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the possible margin of error attached to the figures, they must be taken only as approximations.

4. Jet- and rocket-propelled fighters have been excluded from this analysis, since the types of fuel consumed by these aircraft are not comparable to the standard types of aircraft fuel.

5. The January consumption figure of 32,000 tons is believed to be the lowest total the G.A.F. has yet reached. In comparison with previous months of low G.A.F. consumption, the further decline in January may be attributed to:

(a) the reduction in single-engined aircraft output, and consequently in the number of aircraft and engine tests and ferrying flights, through the loss of production and repair centers in the East;

(b) a further drop in the amount of practice and training flights conducted in operational units, owing to the fuel shortage; and

(c) the cessation, after mid-January, of flying bomb operations by units of the long-range bomber force. Since air-launching activity involves a costly expenditure of aircraft fuel, it may be presumed that this reprisal method has, at least temporarily, fallen victim to the fuel shortage.

Unfavorable weather conditions, coupled with unserviceable airfields, caused a fall in the scale of effort of almost all types in the West. In the case of single-engined fighters, this decline was offset by the transfer of fighter units to the Eastern Front and the increase of air activity in that area. Similarly, tactical reconnaissance and ground-attack operations in connection with the Russian offensive are believed to have resulted in a net increase in the scale of effort. Overall twin-engined fighter activity, on the other hand, was well below the level of December.

6. The extent to which the continuing and critical shortages of aircraft fuel have altered both the nature and the scale of G.A.F. operations may be appreciated by a comparison with the consumption figure for November 1943, which was estimated at 120,000 tons. In the intervening months, dwindling supplies of aircraft fuel have caused progressively the abandonment of all non-essential testing, transport and training flights, and then serious reductions in the number of operational sorties of all kinds.

7. It is estimated that, at the present time, single-engined fighter flights of all kinds account for almost 40 per cent of total fuel consumption on the following basis:

/First-Line Aircraft.

First-Line Aircraft.

Operational flights	3,500 tons	
Transfer and training flights	900 tons	
Rest and refitting flights	350 tons	
Total, First-Line Aircraft		4,750 tons.

Aircraft Industry.

New Production	500 tons	
Repair	50 tons	
Total, Aircraft Industry		550 tons.

Training Units.

S.E.F. day	6,250 tons	
S.E.F. night	600 tons	
Formation Leaders	100 tons	
Total, Training Units		6,950 tons.
Total, Single-Engined Fighters		12,250 tons.

The relatively high single-engined fighter consumption at the present time is due in part to the expanded training program for S.E.F. pilots and, until January, to the sustained high level of single-engined fighter production. But it is also a reflection of the curtailment or abandonment of long-range bomber, transport, coastal and long-range reconnaissance flights, both training and operational, necessitated by inadequate fuel allocations.

* It is impossible to provide a breakdown of the total consumption by types of aircraft fuel (B4, C3 and A3) since many aero-engines employ more than one type. Only a very small proportion of A3 is currently used in the G.A.F., (namely in elementary training), however, and the figures of aircraft fuel consumption represent almost entirely B4 and C3.

G.A.F. Fuel Consumption for January, 1945.

Schedule I - First Line Aircraft.

A. OPERATIONAL FLIGHTS.

Category	Sorties per day	Duration of sortie (hrs).	Consumption per a/c per hr. (gals).	Total Consumption per day (gals).	Total Consumption per month (tons).
S.E.F.	365	$1\frac{1}{4}$	76	34,675	3,468
T.E.F.	70	$1\frac{1}{2}$	132	13,860	1,386
G.A.	175	$1\frac{1}{4}$	72	15,750	1,575
TAC.R.	70	1	73	5,110	511
L.R.R.	20	4	140	11,200	1,120
L.R.B.	10	4	151	6,040	604
Coastal	15	5	32	2,400	240
				Total	8,904

Notes: 1) The number of daily sorties is the A.I.3.(b) estimate, from which jet- and rocket-propelled fighter sorties have been deducted.

2) The average duration of a sortie is based on captured aircraft log-books and records of G.A.F. operational units, and on intelligence observations of enemy air operations.

3) Consumption figures per hour for each category are the average of the consumption rates for the individual aircraft types in the category, weighted by the number of sorties by each type. The consumption rates for individual aircraft types, together with a description of the basis of calculation is listed in Schedule IX (pg. 13).

B. TRANSFER AND TRAINING FLIGHTS.

Category	Sorties per day	Duration of sortie (hrs).	Consumption per a/c per hr. (gals).	Total Consumption per day (gals).	Total Consumption per month (tons).
S.E.F.	365	$\frac{1}{3}$	76	9,247	925
T.E.F.	70	$\frac{1}{2}$	132	4,620	462
G.A.	90	$\frac{1}{3}$	72	2,160	216
TAC.R.	35	$\frac{1}{4}$	73	863	86
L.R.R.	10	$\frac{1}{4}$	140	467	47
L.R.B.	5	$\frac{1}{4}$	151	233	23
Coastal	10	$\frac{1}{3}$	32	133	13
				Total	1,772

Notes: 1) Daily transfer and training flights in first line units are estimated to be the same number as operational flights for S.E.F. and T.E.F. aircraft, and one-half the number for the other categories. This estimate is based largely on captured unit records and individual aircraft logbooks, adjusted in the light of restrictions believed to have been imposed because of the fuel shortage.

2) The average duration of a sortie is based on similar evidence. T.E.F. units are believed to carry out more intensive training activities than other categories.

3) The figures for "transfer and training" flights include routine flights, test flights of aircraft repaired at the unit, etc.: they are intended to cover all non-operational flying by the regular operational units.

C. REST AND REFITTING FLIGHTS.

Category	Sorties per day	Duration of sortie (hrs).	Consumption per a/c per hr. (gals).	Total Consumption per day (gals).	Total Consumption per month (tons).
S.E.F.	90	[illegible]	75	3,375	338
T.E.F.	10		117	585	58
G.A.	25		68	850	85
TAC.R.	10		71	355	36
L.R.R.	1		140	70	7
L.R.B.	2		167	167	17
Coastal	1		40	20	2
				Total	543

Notes: 1) "Resting and refitting" units are those first-line units temporarily withdrawn from operations for rest and re-equipment on to new aircraft types or sub-types.

2) The number of daily sorties has been calculated to bear the same proportion to the strength of these units as transfer and training flights bear to the strength of the operational units.

3) The weighted average consumption per aircraft per hour for each category differs from Schedules IA and B since the individual aircraft types are included in these units in different proportions.

Summary, Schedule I.

A.	Operational flights	8,900 tons
B.	Transfer and training flights	1,800 tons
C.	Rest and refitting flights	500 tons
	Total first line aircraft	11,200 tons

G.A.F. Fuel Consumption for January, 1945.

Schedule II - Aircraft Industry.

A. FIRST LINE AIRCRAFT.

Category		No. of a/c monthly	No. of hrs flight per a/c.	Consumption per a/c per hr. (gals).	Total Consumption per month (gals)	Total Consumption per month (tons)
S.E.F.	New Rep	760 100	$2\frac{1}{2}$	75 75	142,500 18,750	475 63
T.E.F.	New Rep	265 15	5	138 137	182,850 10,275	610 34
G.A.	New Rep	150 40	$2\frac{1}{2}$	76 66	28,500 6,600	95 22
TAC.R.	New Rep	115 40	$2\frac{1}{2}$	77 75	22,138 7,500	74 25
L.R.R.	New Rep	10 10	5	138 140	6,900 7,000	23 23
L.R.B.	New Rep	- 10	5	- 139	- 6,950	- 23
Coastal	New Rep	5 -	5	61 -	1,525 -	5 -
					TOTAL New Rep	1,282 190

B. TRAINING AIRCRAFT

S.E.F.	New Rep	40 100	$2\frac{1}{2}$	75 75	7,500 18,750	25 63
T.E.F.	New Rep	- 20	5	- 137	- 13,700	- 46
Training Types	New Rep	- 100	$2\frac{1}{2}$	- 17.5	- 4,375	- 15
					TOTAL New Rep	25 124

C. TRANSPORT AIRCRAFT

Ju.52 He.111	Rep Rep	25 15	5 5	102 139	12,750 10,425	42 35
					TOTAL	77

D. SECOND LINE AIRCRAFT

Ju.87 Fw.190	Rep Rep	25 25	$2\frac{1}{2}$ $2\frac{1}{2}$	56 76	3,500 4,750	12 16
					TOTAL	28

Summary, Schedule II:

		New	Rep'd	Total
A.	First Line Aircraft	1,282 tons	190 tons	1,472 tons
B.	Training Aircraft	25	124	149
C.	Transport Aircraft	-	77	77
D.	Second Line Aircraft	-	28	28
		Total, Aircraft Industry		1,726

Notes: 1) The numbers of new and repaired aircraft turned out monthly are, for the most part, A.I.3.(b) estimates of the monthly production of the G.A.F.

2) The number of hours flown includes: a) engine tests at the engine assembly or repair factory; b) test flights of the aircraft at the final assembly or repair factory; and c) ferry flights of new or repaired aircraft to their units. In the case of twin-engined aircraft it also includes flight-testing of the W/T apparatus. These calculations are based on figures found in captured log-books of individual aircraft and aero-engines, adjusted to make allowance for subsequent changes due to the strained fuel position.

G.A.F. Fuel Consumption for January 1945.

SCHEDULE III - TRAINING UNITS.

A. SINGLE-ENGINED FIGHTER TRAINING (DAY).

Type of school	(1) No. of flying hrs. per pilot.	(2) No. of months Training.	(3) No. of hrs. per pilot per month	(4) Consumption rate per hr. (gals).	(5) Consumption per pilot per month (gals).	(6) No. of pilots at school in month.	(7) Total cons. per month (gals)	(8) Total cons. per month (tons).
"A" School	50	7	7.1	17.5	123	3360	413,280	1,378
Fighter School (a)	25	2	12.5	17.5	219	960	210,240	701
Fighter School (b)	15	2	7.5	75	563	960	540,480	1,802
R.T.U.	20	1	20	75	1,500	480	720,000	2,400
							Total:	6,281

B. TWIN-ENGINED FIGHTER TRAINING.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
"A" School	50	7	7.1	17.5	123	420	51,660	172
"B" School	40	5	8	17.5	140	300	42,000	140
Blind Flying	30	2	15	135	2,025	120	243,000	810
Night Fighter School	50	3	16.7	135	2,255	180	405,900	1,353
							Total:	2,475

Notes: 1) The figures of S.E.F. and T.E.F. training consumption are based upon an estimate of: a) the average number of hours flown per month in each of the various schools; b) the consumption rate per hour of flying; and c) the average number of pilots attending the school during the month. This method is believed to provide a reasonably accurate figure for average monthly consumption. It does not provide a sensitive index to variations from month to month, which depend on the actual number of hours flown as a result of weather conditions, transfers, etc.

2) The number of flying hours spent at each of the various schools and the duration of the four phases of the training programme for S.E.F. pilots are based on considerable recent P.W. information and believed to be substantially correct. Evidence of T.E.F. training hours is of somewhat older vintage and has been modified in the light of changes in the S.E.F. programme.

3) The total number of pilots in the two training programmes (5,760 S.E.F. and 1,020 T.E.F.) is based on general estimates of monthly input and output of fighter pilots and the rate of pilot wastage in training. The totals have been apportioned among the several schools on the basis of the duration of the course in each school.

4) S.E.F. fighter school (a) trains on elementary aircraft types: S.E. fighter school (b) trains on standard S.E.F. types.

5) It is recognised that the method of calculation employed here is not flexible. The margin of error surrounding the training consumption figure for any month is therefore greater than for other types of consumption, and it is again stressed that these figures are approximations only.

C. SINGLE-ENGINED NIGHT FIGHTER TRAINING.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Type of school	No. of flying hrs. per pilot.	No. of months training.	No. of hrs. per pilot per month	Consumption rate per hr. (gals).	Consumption per pilot per month (gals).	No. of pilots at school in month	Total cons. per month (gals).	Total cons. per month (tons).
S.E. Night Fighter R.T.U.	20	1	20	75	1,500	120	180,000	600

The single-engined night fighter R.T.U. is known to have an establishment strength which is one-fourth that of the day fighter R.T.U. An average of 120 pilots monthly has therefore been chosen.

D. FORMATION LEADERS SCHOOL.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Formation Leaders	20	1	20	75	1,500	20	30,000	100

The Formation Leaders School is a special training course, believed to last one month, for the additional training of promising S.E.F. operational pilots to become leaders of flying formations.

E. BOMBERS, TRANSPORT AND MISCELLANEOUS.

Total..... 775 tons.

A block allocation of 775 tons has been allowed to cover bomber, transport, ground attack, path-finding and similar miscellaneous training on a small scale carried out during the month.

SUMMARY SCHEDULE III.

A.	S.E.F. Training (Day)	6,250 tons.
B.	L.F.F. Training	2,475 tons.
C.	S.E.F. Training (Night)	600 tons.
D.	Formation Leaders	100 tons.
E.	Miscellaneous.	775 tons.
	Total, Training Units:	10,200 tons.

G.A.F. Fuel Consumption for January 1945.

Schedule IV - Transport Units.

A. OPERATIONAL FLIGHTS.

Aircraft type	No. of a/c operating monthly	Hours flown per a/c	Consumption per a/c per hr. (gals).	Total monthly consumption (gals).	Total monthly consumption. (tons).
Ju.52	2400	5	102	1,224,000	4,080
He.111	475	4	139	264,100	880
Misc.	150	5	102	76,500	255
				Total	5,215

B. TRANSFER AND TRAINING FLIGHTS.

Ju.52	25	2	102	5,100	17

Notes: 1) The number of monthly transport sorties is based upon intelligence evidence of transport operations or, when this is lacking, on the establishment strength and serviceability of the transport units operating in the area. The average duration of a sortie is derived from captured aircraft log books.

2) The miscellaneous category of transport aircraft includes such types as the Ju.290, Ju.90, Ju.252, Ju.352, etc. Their performance has been taken as similar to that of a Ju.52.

SUMMARY, Schedule IV.

A. Operational flights 5,200 tons
B. Transfer and Training flights - tons

Total Transport units 5,200 tons

Schedule V - Communications and Auxiliary Units.

Aircraft type	No. of a/c operating monthly	Hours flown per a/c	Consumption per a/c per hr. (gals).	Total monthly consumption (gals).	Total monthly consumption (tons).
He.111	450	5	139	312,750	1,043
Fi.156	750	2	16	24,000	80
				Total	1,123

Notes: 1) Included as "auxiliary" units are such services as liaison, courier, ambulance, glider-towing, etc.

2) The consumption rate of a He.111 has been taken for the twin-engined types in these services (Ju.88, Do.217 and He.110). The Fi.156 rate has been used to cover the single-engined types (FW.58, W.34 etc.).

Schedule VI - Experimental Units.

Experimental Units — 300 tons.

A total of 300 tons has been assigned, as a rough approximation, for G.A.F. experimental units and stations (excluding those engaged in jet or rocket aircraft activity).

Schedule VIII - Second Line Units.

Type of operation	No. of daily sorties	Duration of sortie (hrs)	Consumption per a/c per hr. (gals).	Total daily consumption (gals).
A. Operational flights	130	1¼	74	11,990
B. Training and transfer	65	⅓	73	1,581
C. Rest and re-fitting	13	½	76	497

SUMMARY, Schedule VIII.

A. Operational flights	1200 tons
B. Training and transfer flights	150 tons
C. Rest and refitting flights	50 tons
Total, Second line units	1400 tons

Notes: 1) The "second line" units comprise the special night ground attack units now operating on all fronts.

2) The consumption rate per aircraft is the weighted average of the individual aircraft types (Fw.190, Ju.87, Hs.129, Hs.123, Ju.88, Ju.188 etc.).

Schedule VIII - Miscellaneous.

Miscellaneous — 900 tons.

The "miscellaneous" consumption figure is intended to cover those items of consumption which do not properly fit into any of the foregoing schedules. The total includes fuel consumption by aircraft in Luftflotte reserves, loss of fuel through evaporation, additional losses of fuel through total destruction of aircraft in crashes or by being shot up on the ground, and similar items.

G.A.F. Fuel Consumption for January 1945.

Schedule IX - Aircraft Consumption Rates.

Fuel consumption rates for the various aircraft types have been calculated by the following procedure: (1) Basic rates of fuel consumption per hour at economical cruising speeds were obtained either from captured documents or R.A.E. Farnborough tests; (2) to these figures has been added a percentage correction to adjust them to average consumption rates maintained under operational conditions. This adjustment makes allowance for higher rates of consumption during take off, climb, combat and the remainder of the operational flight. The correction to be applied in each case has been based on the operational experience of comparable R.A.F. and U.S.A.A.F. aircraft types. It will be noted that the highest correction (35%) has been made in the case of single-engined aircraft used in fighter, fighter-bomber or reconnaissance roles and the lowest correction (10% or 5%) in long-distance transport, coastal and reconnaissance flights which are generally flown at economical cruising speeds. A 35% allowance has also been made for training types, since the flights are of shorter duration and a relatively large proportion of the flying time is spent in the take off and in climbing.

The table below lists the aircraft types believed to be employed currently in the G.A.F., together with the adjusted consumption rate per hour and engine type.

Aircraft type	Cons. per hr. (gals.) econ. cruis.	% correction added	Cons. per hr. (gals.) adjusted	Engine type
S.E.F., G.A., Tac.R.				
Me.109	57	35	77	DB605
FW.190 (A, F, G)	56	35	76	BMW801
(D)	51	35	69	Jumo 213
Ju.87	42	35	56	Jumo 211
FW.189	43	35	58	AS 410
Hs.129	59	35	80	GRM04/05
T.E.F.				
Ju.88 (G-1)	107	25	133	BMW801
(G-6)	112	25	140	Jumo 213
Me.110	103	25	129	DB605
He.219	72	25	90	DB603
Me.410	72	25	90	DB603
L.R.R., L.R.B.				
Ju.88 (A)	128	10	141	Jumo 211
(R)	113	10	124	BMW801
Ju.188	126	10	138	Jumo 213
He.111	127	10	139	Jumo 211
He.177	226	10	249	DB 610
Coastal.				
BV.138	58	5	61	Jumo 205
Ar.196	17	5	18	BMW132
Transport.				
Ju.52	93	10	102	BMW132
Ju.252	91	10	100	Bramo 323
Ju.352	96	10	106	Bramo 323
Ju.90	148	10	163	BMW132
Ju.290	156	10	172	BMW801
FW.200	184	10	202	Bramo 323
Auxiliary.				
Fi.156	15	10	16	AS 10
Ju(W)34	35	10	39	BMW132
FW.58	23	10	25	AS 10
Hs.126	46	10	51	Bramo 323
Training.				
Me.108	26	35	35	AS 10
Bu.181	5	35	7	Hirth HM504
Kl.35	5	35	7	Hirth HM504
Ar.96	19	35	26	AS 410
Ar.66	13	35	18	AS 10

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